

## **IN THE CLAIMS:**

### **Amendments to the Claims**

Please amend claim 17 as shown below.

### **Listing of Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (original) A current measurement apparatus of current that flows in a transmission line of an electric circuit, comprising:
  - a light source that radiates polarized light;
  - a magneto-optical device which is installed in a magnetic field generated based upon current that flows in the transmission line, applies the variation of polarization proportional to magnetization induced by the magnetic field to the polarized light when the polarized light radiated from the light source is incident and reflects the polarized light; and
  - means for converting the variation of polarization included in the polarized light reflected on the magneto-optical device to an electric signal and measuring current.
2. (original) A current measurement apparatus according to Claim 1, further comprising:
  - a magnetic field generator for applying a magnetic field to the magneto-optical device.
3. (original) A current measurement apparatus according to Claim 1, wherein:
  - the direction of the magnetization and a direction in which the polarized light travels in an incident position of the polarized light are parallel.

4. (original) A current measurement apparatus according to Claim 1,  
wherein:

the light source is a pulse laser; and

the pulse laser is oscillated in synchronization with measured current.

5. (original) A current measurement apparatus according to Claim 1,  
wherein:

the magnetooptical device is made of a bismuth substituted yttrium iron garnet crystal.

6. (original) A current measurement apparatus according to Claim 1,  
wherein:

the magnetooptical device is made of a substance that produces magnetooptical polar Kerr effect.

7. (original) A current measurement apparatus according to Claim 1,  
wherein:

the magnetooptical device is made of a substance that produces Faraday effect.

8. (original) A current measurement apparatus according to Claim 1,  
wherein:

the electric circuit is a circuit which is a load of small impedance; and

the current is a high frequency current.

9. (original) A current measurement apparatus according to Claim 1,  
wherein:

a marker is formed on the electric circuit in parallel with a transmission line.

10. (original) A current measurement apparatus for measuring current that flows in transmission lines of an electric circuit provided with a first transmission line to be an approach route of the flow of the current and a second transmission line to be a return route of the flow of the current, comprising:

a light source for radiating polarized light;

a magneto-optical device which is arranged in a magnetic field generated based upon current that flows in the first transmission line and a magnetic field generated based upon current that flows in the second transmission line, applies the variation of polarization proportional to magnetization induced by the magnetic field to the polarized light when the polarized light radiated from the light source is incident and reflects the polarized light; and

means for converting the variation of polarization included in polarized light reflected on the magneto-optical device to an electric signal and measuring current, wherein:

the polarized light is incident on the magneto-optical device and between the first transmission line and the second transmission line.

11. (original) A current measurement apparatus according to Claim 10, further comprising:

a magnetic field generator for applying a magnetic field to the magneto-optical device.

12. (original) A current measurement apparatus according to Claim 10, wherein:

the direction of the magnetization in an incident position of the polarized light and a direction in which the polarized light travels are parallel.

13. (original) A current measurement apparatus according to Claim 10, wherein:

the light source is a pulse laser; and

the pulse laser is oscillated in synchronization with measured current.

14. (original) A current measurement apparatus according to Claim 10, wherein:

the magnetooptical device is made of a bismuth substituted yttrium iron garnet crystal.

15. (original) A current measurement apparatus according to Claim 10, wherein:

the magnetooptical device is made of a substance that produces magnetooptical polar Kerr effect.

16. (original) A current measurement apparatus according to Claim 10, wherein:

the magnetooptical device is made of a substance that produces Faraday effect.

17. (currently amended) A current measurement apparatus according to Claim ~~13~~ 16, wherein:

the magnetooptical device is provided with a reflecting film.

18. (original) A current measurement apparatus according to Claim 10, wherein:

the electric circuit is a circuit which is a load of small impedance; and

the current is high frequency current.

19. (original) A current measurement apparatus according to Claim 10,  
wherein:

a marker is formed on the electric circuit at the middle of a first transmission  
line and a second transmission line or in parallel with a transmission line.